



# Periodic Financing Request Report

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Project Number: 51073-004  
MFF Number: 0107  
December 2021

## India: Delhi–Meerut Regional Rapid Transit System Investment Project (Tranche 2)

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Asian Development Bank

## CURRENCY EQUIVALENTS

(as of 3 December 2021)

Currency unit	–	Indian rupee (₹)
₹1.00	=	\$0.01334
\$1.00	=	₹74.9816

## ABBREVIATIONS

ADB	–	Asian Development Bank
AIIB	–	Asian Infrastructure Investment Bank
COVID-19	–	coronavirus disease
CPS	–	country partnership strategy
EIRR	–	economic internal rate of return
EWCD	–	elderly, women, children, and differently abled
FFA	–	framework financing agreement
FIRR	–	financial internal rate of return
km	–	kilometer
MFF	–	multitranches financing facility
MOHUA	–	Ministry of Housing and Urban Affairs
NCR	–	National Capital Region
NCRTC	–	National Capital Region Transport Corporation
O&M	–	operation and maintenance
RRTS	–	regional rapid transit system
SPS	–	Safeguard Policy Statement
STI	–	sexually transmitted infection
TOD	–	transit-oriented development
VCF	–	value capture financing

## NOTES

- (i) The fiscal year (FY) of the Government of India and its agencies ends on 31 March. “FY” before a calendar year denotes the year in which the fiscal year ends, e.g., FY2021 ends on 31 March 2021.
- (ii) In this report, “\$” refers to United States dollars.

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## TRANCHE AT A GLANCE

<b>1. Basic Data</b>		<b>Project Number:</b> 51073-004	
<b>Project Name</b>	Delhi-Meerut Regional Rapid Transit System Investment Project - Tranche 2	<b>Department/Division</b>	SARD/SATC
<b>Country</b>	India	<b>Executing Agency</b>	Ministry of Housing and Urban Affairs, National Capital Region Transport Corporation
<b>Borrower</b>	India		
<b>Country Economic Indicators</b>	<a href="https://www.adb.org/Documents/LinkedDocs/?id=51073-004-CEI">https://www.adb.org/Documents/LinkedDocs/?id=51073-004-CEI</a>		
<b>Portfolio at a Glance</b>	<a href="https://www.adb.org/Documents/LinkedDocs/?id=51073-004-PortAtaGlance">https://www.adb.org/Documents/LinkedDocs/?id=51073-004-PortAtaGlance</a>		
<b>2. Sector</b>	<b>Subsector(s)</b>	<b>ADB Financing (\$ million)</b>	
		<b>Total</b>	<b>0.00</b>
<b>3. Operational Priorities</b>		<b>Climate Change Information</b>	
✓ Addressing remaining poverty and reducing inequalities		GHG reductions (tons per annum)	258,035.000
✓ Accelerating progress in gender equality		Climate Change impact on the Project	Medium
✓ Tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability			
✓ Making cities more livable		<b>ADB Financing</b>	
✓ Strengthening governance and institutional capacity		Adaptation (\$ million)	0.00
		Mitigation (\$ million)	0.00
		<b>Cofinancing</b>	
		Adaptation (\$ million)	1.47
		Mitigation (\$ million)	498.53
<b>Sustainable Development Goals</b>		<b>Gender Equity and Mainstreaming</b>	
SDG 5.1, 5.4		Effective gender mainstreaming (EGM)	✓
SDG 9.1			
SDG 11.2		<b>Poverty Targeting</b>	
SDG 13.a		General Intervention on Poverty	✓
<b>4. Risk Categorization:</b>	Complex		
<b>5. Safeguard Categorization</b>	<b>Environment: A</b>	<b>Involuntary Resettlement: A</b>	<b>Indigenous Peoples: C</b>
<b>6. Financing</b>			
<b>Modality and Sources</b>		<b>Amount (\$ million)</b>	
<b>ADB</b>		<b>0.00</b>	
<b>Cofinancing</b>		<b>500.00</b>	
Asian Infrastructure Investment Bank - MFF-Tranche (Loan) (Partial ADB Administration)		500.00	
<b>Counterpart</b>		<b>799.60</b>	
Government		799.60	
<b>Total</b>		<b>1,299.60</b>	
<b>Currency of ADB Financing:</b> US Dollar			

## I. BACKGROUND

1. **Multitranches financing facility.** India and the Asian Development Bank (ADB) signed the framework financing agreement (FFA) for the Delhi–Meerut Regional Rapid Transit System (RRTS) Investment Project on 23 June 2020. ADB approved the multitranches financing facility (MFF) in an aggregate principal amount of \$1,552 million on 18 August 2020.<sup>1</sup> The availability period of the MFF is up to 30 August 2027.<sup>2</sup> The MFF uses the time-slice approach for large-scale stand-alone projects. Project design, procurement, and safeguards were fully identified and appraised as part of the MFF’s due diligence.

2. The investment project is financing the first of three prioritized rail corridors of the planned RRTS network in the National Capital Region (NCR) of India. The Delhi–Meerut RRTS will pass through the densely populated sections of the NCR, connecting Delhi to Meerut in the state of Uttar Pradesh. With a design speed of 180 kilometers (km) per hour and high-frequency operations of 5–10 minutes, this 82 km corridor is expected to reduce the journey time from 3–4 hours to about 1 hour. It will provide safe, reliable, and high-capacity commuter transit services.

3. The city of Delhi, accounting for 37% of the total NCR population while only covering 4.4% of the NCR area, has been facing unprecedented growth as it acts as a powerful national job magnet, particularly for neighboring states. The large influx of migrants has led to extreme traffic congestion, lack of space for development of essential basic infrastructure, and lack of affordable housing. Congestion is estimated to cost \$9.6 billion (about 12% of Delhi’s gross domestic product) annually in wasted fuel, reduced productivity, air pollution, and accidents.<sup>3</sup> In 2019, a total of 5,610 traffic accidents were recorded in Delhi—1,463 of which resulted in fatalities, the highest among cities in India with 1 million people or more.<sup>4</sup> The growing traffic levels have also contributed to worsening air pollution levels, making Delhi one of the most polluted cities in the world.<sup>5</sup>

4. **Coronavirus disease pandemic.** Plans for transport arteries to enhance regional connectivity have become critical for the inclusive and sustainable development of the NCR. This was further highlighted with the coronavirus disease (COVID-19) pandemic that has exposed Delhi’s long-standing migration problem. As the country went into lockdown in 2020, millions of migrant workers in Delhi and its satellite towns were left stranded without immediate jobs and incomes, in very basic conditions away from their families.

5. **Road map.** The Functional Plan on Transport for the NCR recommended an integrated multimodal transport system to improve the mobility of both people and goods in the NCR.<sup>6</sup> The plan specifically includes a proposal for the construction of eight rail corridors to connect Delhi to other cities in the NCR with high-speed commuter trains under the RRTS. The government has prioritized three rail corridors for implementation. The first corridor will be the northeast Delhi–Meerut corridor (82 km) connecting Delhi to Sahibabad, Ghaziabad, Duhai, and Meerut in Uttar

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<sup>1</sup> The multitranches financing facility comprises (i) \$1,049 million from ADB’s ordinary capital resources; (ii) \$500 million from the Asian Infrastructure Investment Bank (AIIB), partially administered by ADB; and (iii) a \$3 million grant from the Japan Fund for Poverty Reduction, fully administered by ADB.

<sup>2</sup> ADB. 2020. [Report and Recommendation of the President to the Board of Directors: Proposed Multitranches Financing Facility to India for the Delhi–Meerut Regional Rapid Transit System Investment Project](#). Manila.

<sup>3</sup> N. Davis et al. 2017. [Congestion costs incurred on Indian Roads: A case study for New Delhi](#). Chennai: Department of Electrical Engineering, Indian Institute of Technology Madras.

<sup>4</sup> Government of India, Ministry of Road Transport and Highways. 2020. [Road Accidents in India—2019](#). New Delhi.

<sup>5</sup> World Health Organization. Global Health Observatory. [Ambient air pollution](#) (accessed 30 July 2021).

<sup>6</sup> Government of India, Ministry of Urban Development, National Capital Region Planning Board. 2013. [Functional Plan on Transport for National Capital Region—2032](#). New Delhi.

Pradesh, one of the most densely populated sections in the NCR.<sup>7</sup> The second corridor (180 km) will be the Delhi–Alwar corridor, passing through urbanized and industrialized areas of Haryana and Rajasthan, and connecting to Delhi Airport. The third corridor (103 km) will connect Delhi to Panipat in the state of Haryana. All three corridors will converge at the multimodal hub to be constructed at Sarai Kale Khan in Delhi. The three prioritized corridors will be integrated with the airport, eight Delhi Metro stations, three interstate bus terminals, and two Indian Railways stations in the capital, in addition to several other towns in the NCR.

6. **Policy framework.** The development of rail-based mass transit systems is governed by three main government policies. First is the National Urban Transport Policy (2006) which encourages the development of high-capacity public transport systems through special purpose vehicles and offers financial support either in the form of equity or one-time viability gap financing.<sup>8</sup> Second is the National Transit Oriented Development Policy (2017) which supports the growth of dense, mixed-use developments around strategically located transit nodes, preferably within a walking distance of 5–10 minutes. Transit-oriented development (TOD) focuses on creating development patterns that facilitate the use of public transit as a primary mode of transport.<sup>9</sup> Third is the Metro Rail Policy (2017) which emphasizes the benefits of mass rapid transit systems, particularly in urban areas, and the state governments' commitment to provide required support to metro rail companies and agencies to ensure financial sustainability during operations. The policy also mandates state governments to implement value capture financing (VCF).<sup>10</sup>

7. **Strategic context.** Strengthening urban mass transit systems and increasing the environmental sustainability of cities through the development of railways is well recognized in India's transport and regional plans and in ADB's country partnership strategy (CPS) for India, 2018–2022.<sup>11</sup> The investment project is aligned with all three pillars of ADB's CPS on (i) boosting economic competitiveness by expanding infrastructure networks and corridor development, (ii) providing inclusive access to these infrastructure networks, and (iii) addressing climate change. The investment project fits well with the emphasis of ADB's CPS on transformative investments of a national flagship nature to deliver total solutions to the country's burgeoning problems (such as unorganized urbanization) by adopting a cross-sector approach. ADB will support long-term urban development planning, which will enable seamless travel between Delhi and other NCR cities and improve links across the NCR.

8. **Tranches.** The MFF has four tranches. Each tranche finances part of the fully appraised project following its disbursement requirements. The first tranche for \$500 million under ADB's ordinary capital resources, and the \$3 million grant funded by the Japan Fund for Poverty Reduction, were approved on 26 August 2020. ADB and the Government of India signed the loan and grant agreements on 8 September 2020, and both agreements became effective on 6 October 2020. The project completion date of tranche 1 is 30 August 2023. Parallel cofinancing of \$500 million by the New Development Bank was signed on 19 November 2020. Tranche 2, exclusively financed by the Asian Infrastructure Investment Bank (AIIB) for \$500 million, is included in ADB's country operations business plan for India, 2021–2023 as joint cofinancing.<sup>12</sup>

<sup>7</sup> Government of India, MOHUA. Sanction Order of the President for Implementation of the Delhi–Meerut Regional Rapid Transit System. Unpublished (available upon request).

<sup>8</sup> Government of India, MOHUA. 2006. [National Urban Transport Policy](#). New Delhi.

<sup>9</sup> Government of India, MOHUA. 2017. [National Transit Oriented Development Policy](#). New Delhi.

<sup>10</sup> Government of India, MOHUA. 2017. [Metro Rail Policy](#). New Delhi.

<sup>11</sup> ADB. 2017. [Country Partnership Strategy: India, 2018–2022—Accelerating Inclusive Economic Transformation](#). Manila.

<sup>12</sup> ADB. 2020. [Country Operations Business Plan: India, 2021–2023](#). Manila.

## II. ASSESSMENT OF MULTITRANCHE FINANCING FACILITY IMPLEMENTATION

9. **Progress on road map.** The road map agreed in the FFA that underpins the government's policy framework remains valid. Implementation of the RRTS gained impetus with the establishment of the National Capital Region Transport Corporation (NCRTC).<sup>13</sup> The NCRTC has incorporated a wholly owned subsidiary, NCRTC Express Transit Limited, to develop operation and maintenance (O&M) capacity and to capture private sector efficiency. The O&M contract has been bid out and may be awarded by 2022. Apart from the construction and operation of the RRTS corridors, the NCRTC is assisting state governments to develop an action plan and implement TOD and VCF schemes that will provide additional revenue streams to enhance the financial sustainability of such projects.

10. **Improvements in policy framework.** ADB is supporting the NCRTC to develop institutional capacity and to identify and introduce good international practices under the transaction technical assistance on Strengthening Climate Change Resilience in Urban India—Strengthening Smart Urban Mass Rapid Transit and Climate Change Resilience in the NCR, which was approved in October 2019. The technical assistance is funded by the Urban Climate Change Resilience Trust Fund under the ADB-administered Urban Financing Partnership Facility.<sup>14</sup> ADB has mobilized a team of consultants that helped the NCRTC identify two nodes for which master plan and transaction documents will be prepared to support TOD and VCF, thereby maintaining continuity of the government's overall policy framework for mass transit systems (para. 6).

11. **Progress of investment project.** The investment project is progressing reasonably well despite delays because of the second wave of COVID-19 in India in 2021. The physical and nonphysical investments are expected to be completed with a slight delay of about 6 months. Project 3 is likely to be delayed by a year.<sup>15</sup> As of 9 November 2021, contracts awarded totaled \$495.0 million and \$161.0 million had been disbursed out of the \$500.0 million from tranche 1. Construction works in the priority section of the corridor (Sahibabad–Duhai) are at an advanced stage. Four launching girders are in operation for the 17 km viaduct section between Sahibabad and Duhai. The NCRTC is monitoring the progress of construction works at sites on a real-time basis through online video feeds and updates on construction activities made by contractors on the NCRTC's proprietary management software.

12. The NCRTC has developed plans for designing stations using (i) building information modeling systems; (ii) inclusive features friendly to the elderly, women, children, and differently abled (EWCD); and (iii) a solar daylighting system pilot project.<sup>16</sup> The NCRTC has also finalized the terms of reference of the consultancy works for building information modeling, asset management systems, other smart technologies, and capacity development on the European Train Control System Level 2 training by international experts.

13. The work on implementing a gender-friendly workplace policy, including on flexible time reporting and childcare leave, has already been initiated. Other gender initiatives under the Japan

<sup>13</sup> The NCRTC was incorporated on 1 August 2013 and mandated to implement the RRTS project across the four participating states.

<sup>14</sup> ADB. 2019. [Technical Assistance to India for Strengthening Climate Change Resilience in Urban India Subproject 3: Strengthening Smart Urban Mass Rapid Transit and Climate Change Resilience in the National Capital Region](#). Manila. Financing partners are the Rockefeller Foundation and the governments of Switzerland and the United Kingdom.

<sup>15</sup> Tranche 3 (\$250 million) is targeted to be processed in 2023 and tranche 4 (\$299 million) in 2025.

<sup>16</sup> The solar daylighting pilot project captures the sunlight and transfers it through a series of reflecting tubes, thus enabling natural light to penetrate inside the RRTS stations.



Fund for Poverty Reduction grant are already being planned and will be executed in 2022.

14. **COVID-19 impact and response.** Efforts are being made to restart the economy and to mitigate the adverse impact of the pandemic, particularly on employment of the vulnerable population. The NCRTC has developed a standard operating procedure based on central government guidelines for resuming work safely after the COVID-19 lockdowns. This is being implemented at all NCRTC work sites, and requires mask wearing, temperature checks, social distancing, sanitation facility provision, logging of workers, and polymerase chain reaction tests.

15. **Compliance with undertakings and loan and grant covenants.** The government is compliant with loan covenants and undertakings set out in the loan agreement, project agreement, and grant agreement for project 1, and with the FFA.<sup>17</sup>

### III. PERIODIC FINANCING REQUEST

#### A. Impact and Outcome

16. Project 2 is aligned with the following impact: urban mobility in the NCR improved (footnote 8). Project 2 will have the following outcome: efficiency, safety, social inclusiveness, and environmental sustainability of transport in the Delhi–Meerut RRTS corridor improved.<sup>18</sup>

#### B. Outputs

17. The investment project will have three outputs. Tranche 2 will finance a portion of the civil works, equipment, and consulting services under the time-slice approach.

18. **Output 1: Delhi–Meerut regional rapid transit system corridor commissioned.** The investment project will help finance the construction of the 82 km Delhi–Meerut RRTS corridor, including (i) civil works, railway tracks, traction, and power supply, depots at Duhai and Modipuram for the maintenance of rolling stock and fixed assets, and an operation control center and stabling yard at Jangpura; (ii) 24 stations integrating EWCD-friendly design features, at least five of which are to be developed as major multimodal hubs;<sup>19</sup> and (iii) closed-circuit television cameras installed to monitor coaches, public areas of all stations, and pickup and drop-off areas.<sup>20</sup>

19. **Output 2: Institutional capacity of the National Capital Region Transport Corporation strengthened.** The project will (i) develop an institutional strategy including an organizational, financial, and technology plan; (ii) develop training programs in project and contract management, financial management, procurement, and safeguards; (iii) adopt a gender-friendly workplace policy; (iv) support the NCRTC in developing a TOD action plan and VCF instruments for enhancing financial sustainability; and (v) strengthen the capacity of the NCRTC to undertake public–private partnership initiatives.

20. **Output 3: Mobility and economic opportunities of women and the differently abled improved.** The investment project will enable the RRTS to improve urban mobility, and the project's economic impacts will benefit women and the differently abled. The project will include (i) training; (ii) provision of mobility aids; (iii) safe mobility for EWCD; (iv) increased awareness on safe mobility, self-defense, and improved employability skills for selected female students along

<sup>17</sup> The full assessment of compliance with undertakings and loan covenants is outlined in Appendix 10.

<sup>18</sup> The design and monitoring framework for project 2 is in Appendix 1.

<sup>19</sup> Two stations are at-grade catering to depots. Major multimodal hubs are RRTS stations that will include easy interchange to rail, metro, and bus stations for passengers.

<sup>20</sup> ADB financing will not include rolling stock or the signaling and telecommunications system.

the RRTS corridor; and (v) provision of gender-inclusive, socially inclusive, and environmentally sustainable public toilets around RRTS stations. The project will also maximize the spillover effects of developing the RRTS and multimodal hubs, encouraging more women and differently abled persons to engage in employment and other economic activities.

### C. Summary Cost Estimates and Financing Plan

21. Project 2 is estimated to cost \$1,299.6 million (Table 1). Detailed cost estimates by expenditure category and by financier are included in the updated facility administration manual. No funds will be sourced from ADB. The government has requested a loan not exceeding \$500 million from AIIB (38.47%). The government will finance the balance of \$799.6 million (61.53%).

**Table 1: Summary Cost Estimates**  
(\$ million)

Item	Amount <sup>a</sup>
<b>A. Base Cost<sup>b</sup></b>	
1. Output 1: Delhi–Meerut regional rapid transit system corridor commissioned	940.0
2. Output 2: Institutional capacity of the NCRTC strengthened	5.5
3. Output 3: Mobility and economic opportunities of women and the differently abled improved	1.0
<b>Subtotal (A)</b>	<b>946.5</b>
<b>B. Contingencies<sup>c</sup></b>	<b>291.9</b>
<b>C. Financial Charges During Implementation<sup>d</sup></b>	<b>61.2</b>
<b>Total (A+B+C)</b>	<b>1,299.6</b>

NCRTC = National Capital Region Transport Corporation.

<sup>a</sup> Includes taxes and duties of \$83.3 million. Such amount does not represent an excessive share of the project cost. With the exception of output 3, the government will finance taxes and duties through cash contribution.

<sup>b</sup> In mid-2019 prices as of 2 January 2020. Excluding contributions toward state taxes and government-owned land.

<sup>c</sup> Physical contingencies computed at 17% for civil works and goods. Price contingencies computed at an average of 4.0% on local currency costs and 1.6% for foreign currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

<sup>d</sup> Includes interest and commitment charges based on Asian Infrastructure Investment Bank terms.

Sources: Asian Development Bank and Asian Infrastructure Investment Bank estimates.

22. The summary financing plan is in Table 2. AIIB will provide joint cofinancing and the loan will be partially administered by ADB. AIIB negotiated the project on 11 August 2020 and approved it on 29 October 2020.

**Table 2: Summary Financing Plan**

Source	Amount (\$ million)	Share of Total (%)
Asian Development Bank	0.0	0.0
Asian Infrastructure Investment Bank (loan) <sup>a</sup>	500.0	38.5
Government of India <sup>b</sup>	799.6	61.5
<b>Total</b>	<b>1,299.6</b>	<b>100.0</b>

<sup>a</sup> Partially administered by the Asian Development Bank.

<sup>b</sup> The government will provide contributions to cover (i) part of civil works, (ii) part of the signaling and telecommunications systems and track works, (iii) procurement of rolling stock, (iv) taxes and duties, (v) land acquisition and resettlement, and (vi) part of contingencies.

Sources: Asian Development Bank and Asian Infrastructure Investment Bank estimates.

23. Climate mitigation is estimated to cost \$1,295.8 million and climate adaptation is estimated to cost \$3.8 million. AIIB will finance 38.5% of mitigation and adaptation costs.

### D. Implementation Arrangements

24. ADB will partially administer procurement packages financed by the AIIB loan in

accordance with the ADB–AIIB cofinancing agreement. The implementation arrangements are summarized in Table 3. The ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time), with universal procurement, apply to the components cofinanced by ADB and AIIB.

**Table 3: Implementation Arrangements for Project 2**

Aspects	Arrangements		
Implementation period	December 2021–August 2024		
Estimated completion date	30 August 2024		
Estimated loan closing date	28 February 2025		
Management			
Executing agency	Ministry of Housing and Urban Affairs acting through the NCRTC		
Procurement	OCB international advertisement	56 contracts	\$2,320,080,353
	OCB national advertisement	22 contracts	\$27,496,917
Retroactive financing and advance contracting	The NCRTC will use advance contracting and retroactive financing for civil works, goods and services, and consultant recruitment. Retroactive financing will be up to 20% of the loan proceeds, to finance expenditures incurred prior to loan effectiveness but not earlier than 12 months from the date of the legal agreements.		
Disbursement	ADB shall review each withdrawal application, following ADB disbursement procedures and guidelines, and advise AIIB to make the necessary payment, if any, subject to approval by AIIB. The loan proceeds will be disbursed following ADB's <i>Loan Disbursement Handbook</i> (2017, as amended from time to time) and detailed arrangements agreed between the government and ADB.		

ADB = Asian Development Bank, AIIB = Asian Infrastructure Investment Bank, NCRTC = National Capital Region Transport Corporation, OCB = open competitive bidding.

Source: ADB.

## E. Project Readiness

25. Readiness is high, as the complete scope to be financed by the MFF has been appraised by ADB. Environmental and social due diligence has been completed for the entire corridor.

## IV. DUE DILIGENCE

### A. Technical

26. The technical viability is sound, with use of proven technology. The technical designs and specifications for most of the civil engineering works are based on Indian standards, which are well proven and widely applied on Indian railways and other metro projects. The executing agency prepared project reports, detailed designs, and specifications. As per the specifications, the track will conform to international railway standards, with the rolling stock being of modern design, lightweight, of stainless steel or aluminum construction, and fitted with a regenerative braking system. Modern signaling systems will be used that employ European Train Control System Level 2 technology to enhance safety and efficiency. Platform screen doors will be installed to separate the station platform from the train to prevent accidents. Climate change risks have been addressed in the project design by (i) using head-hardened, continuous welded rail and concrete lining underground tunnels; (ii) raising underground station entrances to above surrounding ground levels; (iii) raising viaduct levels across major rivers to prevent flooding of the tracks during heavy floods; and (iv) installing rainwater harvesting systems at various stations and at specified intervals along the elevated viaducts.

### B. Economic and Financial

27. **Economic analysis.** The economic evaluation of the project was conducted following ADB

guidelines and compared the project costs and benefits in with-project and without-project cases with the economic internal rate of return (EIRR) as the decision criterion.<sup>21</sup> During the MFF approval, the EIRR for the RRTS was estimated to be 11.3%, with a net present value of more than \$977 million. The evaluation included a sensitivity analysis to investigate the economic viability of the project assuming reduced ridership and employment benefits. The EIRR was more than 9% under all scenarios, demonstrating that the investment project would remain economically viable given adverse changes in costs and benefits. Considering the conservative ridership base and growth rate assumptions, the range of ridership reduction in the sensitivity analysis, and the planned operation schedule, the potential impact of COVID-19 on economic viability is within the scope of the sensitivity analysis. The RRTS will also contribute to the NCR's economic growth by structuring land use and transport patterns. The project will directly and indirectly benefit the poor and vulnerable, and distribution analysis shows the project will have a poverty impact ratio of 0.27. These remain valid for project 2.

28. **Financial sustainability.** The financial evaluation of the project was conducted following ADB guidelines.<sup>22</sup> It assessed the costs and earnings that would accrue because of the project using the discounted cash flow method, and it calculated the financial internal rate of return (FIRR) over 36 years, comprising 6 years of construction and 30 years of operations. The base value of the FIRR is 2.5%, which is higher than the weighted average cost of capital of 2.4%. However, the FIRR is highly sensitive to project cost, ridership, and fare revenue assumptions. Any adverse change of about 10% in these assumptions would result in a lower FIRR than the weighted average cost of capital. The evaluation assumes traffic at commencement of operations as 25% of the forecast, which is increased to forecast estimates in the fifth year after commencement. The project revenues include ticket sales, advertisements, and rentals at stations. The earnings before interest, depreciation, tax, and amortization margin of the project (expressed as a percentage of revenue of the project) is about 19% in the first year of operation and higher thereafter. This implies that the project is expected to service its O&M obligations on its own. The debt service coverage ratio is less than 1.0 during the first year of operation, requiring an infusion of an estimated ₹2.7 billion to meet the debt obligations to ADB, AIIB, and the New Development Bank (interest).<sup>23</sup> Any shortfalls in servicing the debt and O&M obligations of the project will be borne by the governments of Delhi and Uttar Pradesh in the ratio of route-km falling in their respective states, as per the government sanction order and related memoranda of understanding (footnote 7). These remain valid for project 2.

### C. Governance

29. **Financial management.** The financial management assessment was prepared during the MFF due diligence following ADB's Guidelines for Financial Analysis and Evaluation, Financial Management Assessment, and related technical guidance notes.<sup>24</sup> The overall financial management risk remains *moderate*, with appropriate risk mitigation measures in place. Details of risks and key mitigating measures are in the facility administration manual. An independent auditor appointed by the Comptroller and Auditor General of India audits the project-level financial statements for the ADB-funded project.<sup>25</sup> The NCRTC prepares its entity-level financial statements in compliance with the Indian Accounting Standards, with unqualified audit opinions.

30. **Procurement and value for money.** The use of the National Informatics Center's e-

<sup>21</sup> ADB. 2017. [Guidelines for the Economic Analysis of Projects](#). Manila.

<sup>22</sup> ADB. 2019. [Financial Analysis and Evaluation](#). Manila.

<sup>23</sup> The financial analysis is in Appendix 5.

<sup>24</sup> ADB. 2019. [Financial Analysis and Evaluation](#). Manila; and ADB. 2015. [Financial Management Assessment](#). Manila.

<sup>25</sup> The annual project financial statement for fiscal year 2021 is submitted within the due date of 30 September 2021.

procurement system has been approved to procure all major packages. The NCRTC has developed a draft procurement manual that is aligned with the policies of the Government of India and outlines detailed processes and procedures to be adopted for all procurement. Value for money is being implemented through strategic procurement planning and a risk-managed approach by applying appropriate procurement methods, contract forms, and review procedures. Overall, the institutional capacity of the NCRTC is adequate. A dedicated finance and procurement team has been deployed by the NCRTC to process the invoices of contractors and suppliers in a timely manner. The procurement team has 11 officers and staff. The construction works of each section are supervised by a dedicated chief project manager who is responsible for the day-to-day contract administration and implementation. Forty-one permanent staff members have attended training and/or webinars organized by ADB on procurement, disbursement processes, and safeguard requirements. The NCRTC has trained two staff on contract management, construction management, and other technical subjects in-house and through knowledge-sharing arrangements.

31. Integrity due diligence was conducted.<sup>26</sup> No significant integrity risks were identified. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and the NCRTC. The specific policy requirements and supplementary measures are described in the updated facility administration manual.

#### **D. Poverty, Social, and Gender**

32. **Poverty.** Uttar Pradesh is among the few states in India that has a higher proportion of urban poverty (37%) than rural poverty (29%).<sup>27</sup> As major RRTS nodes in the state, the urban areas of Ghaziabad, Meerut, and Modinagar are expected to benefit from the investment project through reduced travel time to Delhi, increased social mobility, and improved safety. The investment project will contribute to economic growth and employment by enabling better access to income-generating opportunities and basic services such as health care and education. Reduced travel time will alleviate disparity among urban, peri-urban, and rural areas of India's NCR. The fares will be kept low (₹2 per km) to ensure affordability for even the low-income groups. There will be a separate class coach with much higher fares to target the upper middle class and rich segments of the population, thereby enabling the provision of much lower fares for the poor.

33. **Gender equality and social inclusion.** Project 2 is classified *effective gender mainstreaming*. The NCRTC has appointed a gender focal point for the implementation and monitoring of the gender equality and social inclusion action plan, which provides activities integrated within the project design, including (i) implementing gender-responsive and socially inclusive design features across all infrastructure; (ii) incorporating measures to enhance women's safe mobility, such as (a) reserved coaches in RRTS trains; (b) well-lit and closed-circuit television-equipped coaches, public areas of all stations, and pickup and drop-off areas; and (c) security guard patrols in public areas; and (iii) pilot-testing modalities for improved mobility of women and the differently abled, including (a) improving employability and entrepreneurship opportunities for 1,400 women; and (b) providing mobility, visual, and hearing assistive aids to 1,000 differently abled persons in the urban areas of Ghaziabad, Meerut, and Modinagar.

34. **Sexually transmitted infections and human trafficking.** Sexually transmitted infections (STI), including HIV, and human trafficking are risks in the project area. The influx of workers in

<sup>26</sup> ADB. 2003. [Enhancing the Asian Development Bank's Role in Combating Money Laundering and the Financing of Terrorism](#). Manila.

<sup>27</sup> R. Mangain and S. Verick. 2017. [The State of Employment in Uttar Pradesh: Unleashing the potential of inclusive growth](#). Geneva: International Labour Organization.

the project area during construction could create additional risks for STIs. The project will mitigate these risks by providing STI awareness and prevention programs to construction workers, in line with good practices adopted by the National AIDS Control Organization, as set out in the environmental management plan that will form part of the contractors' obligations.

## **E. Safeguards**

35. The MFF follows a time-slice financing approach, where the funds under project 2 will be utilized to continue civil works initiated under project 1. The safeguards aspects of the project were fully appraised during the preparation of project 1 and there is no change in scope under project 2. The safeguards documents disclosed on the ADB website remain in effect and do not require updates. In compliance with ADB's Safeguard Policy Statement (SPS) (2009), the project's safeguard categories are as follows.<sup>28</sup>

36. **Environment (category A).** The environmental issues remain the same as in project 1. Most of the alignment will be built along the center of a busy highway. Given the large scale of construction works involving the use of heavy equipment, health and safety risks are anticipated for the construction workers, existing road users, and residents living near the alignment. Other anticipated environmental issues include removal of trees; disturbance from construction-related noise and vibration; generation of large quantities of waste, including excavated material; risks of health and communicable diseases from large numbers of workers; and generation of dust, air, and water pollution. While most risks are expected to be short-term and limited during construction, the key long-term risks are noise and vibration impacts on residents and structures located along the project alignment. Mitigation measures for all environmental risks identified for the project have been addressed through design measures and inclusion of appropriate actions in the environmental management plan and the safety, health, and environmental guidelines.

37. **Involuntary resettlement (category A).** One resettlement plan has been prepared for all tranches in line with the ADB SPS and the AIIB Environment and Social Framework (2012). The involuntary resettlement impacts remain the same as in project 1—about 138 hectares of private land and 32 hectares of government land will be required for 17 stations and two depots. It is estimated that 813 households (5,453 people) will be affected by physical displacement (81 households) and economic displacement (732 households) because of land acquisition or restrictions on land use. Out of the total project-affected households, 571 households will experience significant impacts in the form of loss of residential structure or productive assets such as agricultural land and commercial structures.

38. The NCRTC grievance redress committee and a grievance register are in place and functioning. The land department of the NCRTC is the nodal department monitoring land-related issues and implementation of rehabilitation and resettlement plans. A resettlement implementing agency and external monitor have been engaged to support the NCRTC in resettlement plan implementation, including meaningful consultation and grievance redress.

39. **Indigenous peoples (category C).** The project alignment is generally in urban and peri-urban areas where scheduled tribes do not have cultural attachment to land, customary territories, and distinct livelihood systems. Hence, it will not affect indigenous peoples' communities within the meaning of the ADB SPS.

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<sup>28</sup> ADB. [Safeguard Categories](#).

## F. Summary of Risk Assessment and Risk Management Plan

40. Significant risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.<sup>29</sup>

**Table 4: Summary of Risks and Mitigating Measures**

<b>Risks</b>	<b>Mitigation Measure</b>
Procurement delays	All contracts to be financed by ADB will be procured following the ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time), with major packages subject to prior review by ADB. ADB has also conducted procurement workshops for the NCRTC to enhance its understanding of ADB procurement policy, guidelines, and standard bidding documents. ADB will provide additional procurement training during the implementation period as necessary.
Financial sustainability	The financial sustainability assessment was done using conservative assumptions, and rigorous efforts are underway to maximize revenue through TOD and VCF. The government has also provided assurances to ensure the financial sustainability of operating the RRTS. In case of any shortfall in revenue and if the NCRTC is not able to service debt and operation and maintenance obligations of the project, sufficient budget and timely releases of funds for operating the RRTS will be provided by the participating state governments, in accordance with the presidential sanction order.
COVID-19 pandemic	The NCRTC has developed a standard operating procedure based on central government guidelines for resuming work safely after the COVID-19 lockdowns. Preparatory works and safeguards plan implementation have resumed following the second wave of COVID-19 in India in 2021.

ADB = Asian Development Bank, COVID-19 = coronavirus disease, NCRTC = National Capital Region Transport Corporation, RRTS = regional rapid transit system, TOD = transit-oriented development, VCF = value capture financing.

Source: ADB.

## V. ASSURANCES

41. The government and the Ministry of Housing and Urban Affairs (MOHUA) acting through the NCRTC have assured ADB that implementation of the project continues to conform to all applicable ADB policies, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement, as described in detail in the updated facility and administration manual and loan documents.

42. The government and the MOHUA acting through the NCRTC have agreed with ADB on certain covenants for the project, which are set forth in the FFA with ADB.

## VI. THE PRESIDENT'S DECISION

43. On the basis of the approval by ADB's Board of Directors for the partial administration by ADB of the loan to be provided by the Asian Infrastructure Investment Bank under the multitranche financing facility in an aggregate principal amount not exceeding \$1,552,000,000 to India for the Delhi–Meerut Regional Rapid Transit System Investment Project, the President has approved the administration by ADB of the tranche as described in paras. 21, 22, and 24 of this report.

<sup>29</sup> The updated risk assessment and risk management plan is in Appendix 9.

## DESIGN AND MONITORING FRAMEWORK FOR PROJECT 2

<b>Impact the Project is Aligned with</b> Urban mobility in the National Capital Region improved (National Urban Transport Policy, 2006) <sup>a</sup>			
<b>Results Chain</b>	<b>Performance Indicators with Targets and Baselines</b>	<b>Data Sources and Reporting Mechanisms</b>	<b>Risks</b>
<p><b>Outcome</b> Efficiency, safety, social inclusiveness, and environmental sustainability of transport in the Delhi–Meerut RRTS corridor improved</p>	<p>By 2028:</p> <p>a. Travel time between Delhi and Meerut by train reduced to 1 hour (2021 baseline: 3–4 hours) (OP 2.4.1)</p> <p>b. 258,035 tons of CO<sub>2</sub> reduced per annum (2021 baseline: 0) (OP 3.1, OP 3.1.3)</p> <p>c. At least 70% of riders, including EWCD, perceive the RRTS to be accessible, safe, and reliable<sup>b</sup> (2021 baseline: Not applicable) (OP 2.1.4)</p>	<p>a.–b. NCRTC statistics</p> <p>c. RRTS user survey by NCRTC</p>	<p>Feeder connectivity issues impact ridership.</p>
<p><b>Outputs</b> 1. Delhi–Meerut RRTS corridor commissioned</p>	<p>By 2024:</p> <p>1a. 40% progress toward 82 route-km of standard gauge electrified rail track installed, with systems and signaling (2021 baseline: 0) (OP 1.3.1, OP 3.2.5, OP 4.1.2)</p> <p>1b. 40% progress toward 24 EWCD-friendly stations with climate- and disaster-resilient features constructed and operational<sup>c</sup> (2021 baseline: 0) (OP 1.3.1, OP 3.2.5, OP 4.1.2)</p> <p>1c. 40% progress toward at least five RRTS stations developed as major multimodal hubs<sup>d</sup> (2021 baseline: 0) (OP 1.3.1, OP 3.2.5, OP 4.1.2)</p>	<p>1a.–c. Progress reports</p>	<p>Unpredicted ground conditions, such as mixed strata, may delay tunnel boring works in the underground sections.</p>
<p>2. Institutional capacity of the NCRTC strengthened<sup>e</sup></p>	<p>By 2024:</p> <p>2a. Draft action plan on TOD, VCF instruments, and PPP initiatives approved by NCRTC (2021 baseline: Not applicable)</p> <p>2b. A smart-technology-based platform (BIM) established and adopted for project design, implementation, and management (2021 baseline: Not applicable)</p> <p>2c. Gender-friendly workplace policy developed and institutionalized within the NCRTC (2021 baseline: Not applicable) (OP 2.3.2)</p> <p>2d. At least 50 NCRTC staff, including 80% of eligible women staff, reported increased knowledge in project and contract management, financial management, procurement, and safeguards (2021 baseline: Not applicable) (OP 6.1.1)</p>	<p>2a.–c. Progress reports</p> <p>2d. Post-training program reports and surveys of NCRTC staff</p>	



Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
3. Mobility and economic opportunities of women and differently abled improved <sup>f</sup>	<p>By 2024:</p> <p>3a. At least 600 women received training for employment and/or entrepreneurial opportunities arising from improved RRTS corridors (2021 baseline: 0) (OP 2.1.1)</p> <p>3b. At least 500 differently abled persons received hearing, visual, and/or physical mobility assistive aids (2021 baseline: 0) (OP 1.3)</p>	3a.–3b. Progress and completion reports submitted to ADB and NCRTC by the contracted organization, including certificates issued on completion of training and/or receipt of assistive aids	Mobilization of target beneficiaries takes longer because of social behavior and perceptions.

### Key Activities with Milestones

#### 1. Delhi–Meerut RRTS corridor commissioned

1.1 Award contracts by Q4 2021.<sup>g</sup>

#### 2. Institutional capacity of the NCRTC strengthened

2.1 Award BIM platform support consultants by Q4 2021.

2.2 Establish BIM platform for project design, implementation, and management by Q2 2022.

2.3 Establish institutional capacity for project implementation and management using smart technologies by Q3 2022.

2.4 Develop gender-friendly workplace policy by Q3 2022.

#### 3. Mobility and economic opportunities of women and the differently abled improved

3.1 Establish the GESI implementation unit by Q4 2021.

3.2 Award and mobilize national (nongovernment or consulting) organizations by Q2 2022.

### Inputs

ADB: \$0

Government: \$799,600,000

AIIB: \$500,000,000 (loan)

JFPR: \$3,000,000 (grant)<sup>f</sup>

ADB = Asian Development Bank; AIIB = Asian Infrastructure Investment Bank; BIM = building information modeling; CO<sub>2</sub> = carbon dioxide; EWCD = elderly, women, children, differently abled; GESI = gender equality and social inclusion; JFPR = Japan Fund for Poverty Reduction; km = kilometer; NCRTC = National Capital Region Transport Corporation; OP = operational priority; PPP = public–private partnership; Q = quarter; RRTS = regional rapid transit system; TOD = transit-oriented development; VCF = value capture financing.

<sup>a</sup> Government of India, Ministry of Housing and Urban Affairs. 2006. *National Urban Transport Policy*. New Delhi.

<sup>b</sup> The indicator follows the approach of another (and only) recently approved project from India, the Mumbai Metro Rail Systems Project, where the target is 60%. The target is based on extensive discussions with the NCRTC and reflects ADB's experience in the design of the Mumbai Metro Rail Systems Project.

<sup>c</sup> Features of EWCD-friendly stations are indicated in footnote c of the GESI Action Plan.

<sup>d</sup> Major multimodal hubs are RRTS stations that will include easy interchange to rail, metro, and bus stations for passengers.

<sup>e</sup> Output 2 is supported by technical assistance funded by the Urban Climate Change Resilience Trust Fund. ADB. 2019. [Technical Assistance to India for Strengthening Climate Change Resilience in Urban India Subproject 3: Strengthening Smart Urban Mass Rapid Transit and Climate Change Resilience in the National Capital Region](#). Manila.

<sup>f</sup> Output 3 for projects 1 and 2 is supported by the grant funded by the Japan Fund for Poverty Reduction approved in August 2020.

<sup>g</sup> Contracts are time-sliced and will be partially funded by AIIB financing in Tranche 2.

### Contribution to Strategy 2030 Operational Priorities

Expected values and methodological details for all OP indicators to which this operation will contribute results are detailed in Contribution to Strategy 2030 Operational Priorities (Appendix 3 of the Periodic Financing Request Report of Project 2).

Source: Asian Development Bank.